

In the Claims:

1-25. (cancelled)

26. (withdrawn) A method of fabricating a probe card contact apparatus including the following steps:

providing a two-metal sheet comprising on one edge a strip of a noble or limited oxidizing metal integrally connected to a larger section of a different conductive metal, attaching said two-metal sheet to a polymeric film with the noble metal overhanging the polymeric film by at least 0.050 inches,

photolithographically defining a needle pattern, chemically etching features greater than about 100 microns, and laser ablating needle features less than about 100 microns,

punching comb shaped segments of polymeric film with attached needles,

positioning one or more segments of film with needles on a semi-arc shaped surface of a support block with the noble metal tips extending into a central opening in the support block,

forming the needle tips downward to a position below opposite surface of the block, and aligning and positioning the block into an opening in a probe card with terminals of the needle fingers in contact leads on the probe card.

27. (withdrawn) A method of fabricating a probe card contact apparatus including the following steps:

providing a two-metal sheet comprising on one edge a strip of a noble or limited oxidizing metal integrally connected to a larger section of a different conductive metal, attaching said two-metal sheet to a polymeric film with the noble metal overhanging the polymeric film by at least 0.050 inches,

depositing a laser ablatable film over the exposed surface of said metal sheet,

inputting a pattern for the needles to a laser, and ablating the deposited film to form a mask,

etching the two-metal sheet to completely remove unwanted metal,

punching comb shaped segments of polymeric film with attached needles,
positioning one or more segments of film with needles on a semi-arc shaped surface of a support block with the noble metal tips extending into a central opening in the support block,
forming the needle tips downward to a position below opposite surface of the block, and
aligning and positioning the block into an opening in a probe card with terminals of the needle fingers in contact leads on the probe card.

28. (new) A probe-comb apparatus comprising:

a two-metal probe-needle having a first tip-end and a second end; a film segment having a second surface and a first surface to which the probe-needle is attached and wherein the tip-end extends beyond an edge of the film.

29. (new) The apparatus in claim 28 wherein said tip-end comprises a noble metal.

30. (new) The apparatus in claim 29 wherein said noble metal is selected from the group consisting of palladium, rhodium, and gold.

31. (new) The apparatus in claim 29 wherein said tip-end comprises a metal and a noble metal deposited thereon.

32. (new) The apparatus in claim 28 wherein said tip-end is between 0.00075 and 0.0015 inches thick.

33. (new) The apparatus in claim 28 wherein said tip-end is at least 0.05 inches long.

34. (new) The apparatus in claim 28 wherein tip-end is between 0.00075 and 0.002 inches wide.

35. (new) The apparatus in claim 28 wherein a second probe-needle is attached on the film segment.

36. (new) The apparatus in claim 28 wherein said film is a thermally stable, dielectric, polymeric material.

37. (new) The apparatus in claim 28 wherein said film is between 0.001 and 0.003 inches thick.

38. (new) The apparatus in claim 28 wherein said film comprises polyimide.

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39. (new) The apparatus in claim 28 wherein said probe-needle is formed to optimize its electrical impedance.
40. (new) The apparatus in claim 28 further including a ground plane patterned on the second surface of said film.
41. (new) The apparatus in claim 28 wherein the probe-needle is patterned with the aid of a computer and is formed by a laser.
42. (new) The apparatus in claim 28 wherein the probe-needle is at least partially formed by laser ablation.

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43. (new) A probe card apparatus comprising:

a support block having a curved surface, a bottom surface, an outer perimeter, and an opening in the center;

a two-metal probe-needle;

a film segment to which the probe-needle is attached and wherein a tip-end of the needle extends beyond an edge of the film.

44. (new) The apparatus in claim 43 wherein said tip-end of the needle extends beyond the bottom surface of the central opening in the support block.

45. (new) The apparatus in claim 43 wherein said support block comprises a dielectric material having a coefficient of thermal expansion between 2 and 8 PPM.

46. (new) The apparatus in claim 43 wherein said support block comprises a ceramic material.

47. (new) The apparatus in claim 43 wherein said support block comprises a composite polymer.

48. (new) The apparatus in claim 43 wherein said the outer perimeter of said support block conforms to an opening in a probe card

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49. (new) A probe card apparatus comprising:

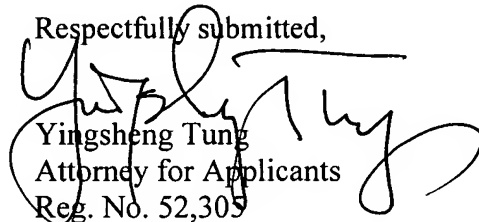
a support block having a curved surface, a bottom surface, an outer perimeter, and an opening in the center;

a two-metal probe-needle;

a film segment to which the probe-needle is attached and wherein a tip-end of the needle extends beyond an edge of the film; and

a probe card having an opening fitted to said support block perimeter and a conductive trace adapted to contact said probe-needle.

Respectfully submitted,



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